received by the camera and, based upon the existence and/or strength of this signal, the selection of that remote unit may take place. In a preferred arrangement, each remote unit contains a directional infrared (IR) light-emitting diode, and the camera would be equipped with an IR receiver establishing a highly directional path between a particular remote unit and the camera, enabling the camera to single out a particular remote unit on this basis.

The infrared receiver may be located at any forward-looking position on the camera and, advantageously, may also be positioned in the optical path of the camera's image-gathering facilities to ensure that the remote unit is within the picture-taking field-of-view of the camera system so as to enhance the discrimination of a particular remote unit. If an electro-optical image sensor such as a charge-coupled device (CCD) is utilized as the picture-taking element, one or more of the pixels of the array may be used to detect the optical signal from a remote unit, be it infrared or otherwise, thereby obviating the need for a separate detector element.

As with the use of an RF signal for remote-unit discrimination, an optical or infrared signal from the remote unit may also be modulated with information particular to the remote unit responsible for its transmission, including encoded information identifying that remote unit. Audio and/or distance-related information may also be modulated onto an optical carrier. By modulating remote-unit identification information, audio information and auto-ranging information onto the same carrier, whether optical or RF, the invention may accommodate remote microphone and auto-focus distancing functions automatically between plurality of different remote units by simply pointing the camera in the direction of one of the remote units.

Now turning to FIG. **3**, there is shown a different embodiment of the invention directed to distance measurement apart from optional picture or sound recording. In this embodiment, a first unit **310** communicates with a second unit **320** so as to determine the distance therebetween for indication, for example, on display **312** associated with the first unit **310**. According to this arrangement, an acoustic transducer **314** (not visible in the figure) transmits an acoustic pulse, preferably in the form of an inaudible ultrasonic signal **316** to a pick-up **318** on the unit **320**. This signal is modulated onto an RF carrier, as implied by broken line **322**, and broadcast via antenna **324** to antenna **326** via electromagnetic signal **328**. Within the unit **310**, this received signal is demodulated to uncover the modulated acoustic signal, and compared to that transmitted to determine a delay therebetween for use in a distance calculation. This particular embodiment is well-suited to small distance-measurement tasks, such as room dimensioning, architectural planning, and so forth, or measurements over greater distances for use in surveying, for instance. In the event that the units **310** and **320** are sufficient displaced physically that raw voice communication is problematic, the pick-up **318** may be selected so as to detect audible acoustic signals in addition to the ranging pulse(s), in which case the signal **328** may be modulated to include both distance and voice information. At unit **310**, the voice information is separated from the distance information and output through speaker **322** or headphones **324**. Sound recording is optional in this case. In the event that the pick-up **318** is incapable of detecting both audible inaudible acoustic information, a separate microphone **330** may be added for audible sound detection.

One shortcoming of many distance-sensing systems is their reliance on non-active time-of-flight measurements. In terms of spherical coordinates, these systems may be quite accurate in determining the radial distance, but are relatively inaccurate in determining the angular position (or longitude), since, at beset, they may rely on maximizing the amplitude of the return signal. As such, they easily may be confused by signal cancellation due to reflections and other environmental effects. The angular positioning effect is exacerbated by an accompanying uncertainty in the vertical direction (or co-latitude), with the reseult that the system is effective for lens focusing, but is not satisfactory for the complete function of aiming of the camera.

In the instant invention, the received RF signal may serve yet a further purpose. In FIG. **4***a,* opposite sides of a camera body **400**, such that they are preferably perpendicular to the camera body sides, co-linear, and at a 180-degree angle relationship to each other. In FIG. **4***b,* the electrical signals received by antennas **402***a* and **402***b* are conducted to RF-signal amplifiers **406***a* and **406***b,* respectively. The outputs of these amplifiers are supplied to a phase-discriminator circuit **408**, which develops an error signal **410**, the polarity of which is related to the phase error.

With this arrangement, if the camera is pointing to the left of a desired target (bearing an inventive transmitter unit), the circuit **408** will sense the phase difference of the signal as received at the two antennas, and develop a positive voltage having a predetermined polarity. If, on the other hand, the camera is positioned so as to be pointing to the right of the desired target, then the circuit will develop a voltage of the opposite polarity. This error signal is then conducted to the differential amplifier **412**, which may be used to drive a pan-control motor (not shown) for the camera mount. This effective creates an electro-mechanical phase-locked loop, which will constantly adjust the camera pan-angle so as to zero-out the phase-error developed at the two antennas. As the transmitter is moved, the camera will pan to keep the transmitter in the center of the field of view.

In an alternative implementation, shown in FIG. **5**, the camera body **500** has been fitted with two antennas, **502***a* and **502***b,* as in the previous description in regards to FIG. **4***a.* However, in this case, the camera body also is fitted with two additional antennas, **502***c* and **502***d,* preferably disposed on the top and bottom of the camera body and at right angles to the axis of antennas **502***a* and **502***b.* Using a similar circuit to that of FIG. **4***b,* the phase difference signal may be derived from the top and bottom antennas, and used to drive a tilt motor circuit, which moves the camera in an up/down action in the vertical plane. In this way, both the vertical positioning and the horizontal positioning of the camera may be effected, utilizing the transmitter to provide the required signal from which the necessary phase information may be derived.

It should be noted that many different configurations of the antennas may be utilized to achieve the same effect. For example, instead of four antennas disposed at right angles to each other, three antennas may be disposed at 120-degree angles from each other, and the appropriate phase-difference information derived for controlling the pan and tilt motors. Practitioners skilled in the art will appreciate the applicability of these techniques to the various alternative configurations.

It should be apparent from the embodiments just described with reference to FIGS. **4** and **5** that a camera need only receive a wireless signal from a remote source through multiple antennas in order to achieve an automatic pan or tilt control function. Thus, the signal discrimination and pan/tilt aspects of the invention may be employed with respect to